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A New Microphthalmic Trechine Beetle of the *Trechoblemus*
Complex from Tian Shan

With 3 Text-figures

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ABSTRACT A new microphthalmic trechine beetle belonging to the *Trechoblemus* complex is described from the Soviet territory of the Tian Shan Mountains in Central Asia, under the name of *Oroblemmites tianshanicus*. It closely resembles *Oroblemus* of northern Honshu, Japan, but is regarded as constituting a full genus, because it seems to belong to a lineage different from that of the latter. A wide blank in our knowledge about the distribution of the genus-complex is filled to a considerable extent by the present discovery.

The *Trechoblemus* complex, comprising about 280 species of 13 genera, is one of the groups of trechine beetles that include the most archaic forms. With the exception of the two genera, *Trechoblemus* and *Lasiotrechus*, whose constituents are almost always fully winged, the components of this genus-complex have hitherto been known from three widely distant areas, that is, Japan and Korea of East Asia, eastern North America, and the Carpathians of middle and eastern Europe (cf. JEANNEL, 1928, pp. 44–46; UÉNO & YOSHIDA, 1966; BARR, 1971; HŮRKA, 1977; etc.). All of them are generally regarded as derivatives of *Trechoblemus*-like ancestry, and are sometimes so similar to each other as to be considered congeneric in spite of wide geographical gap (cf. BARR, 1964).

However, intermediate link connecting alate oculate species with apterous anophthalmic ones has been very inadequately known. The only genus that falls in this category is *Oroblemus* endemic to northern Honshu, Japan (UÉNO & YOSHIDA, 1966; UÉNO, 1975), which is in certain respects, more archaic than *Trechoblemus* itself. The latter genus has a wide distributional range, so far known from the

Euro-Siberian Region, East Asia and western North America (cf. UÉNO, 1955, pp. 404–405; SUENSON, 1957, pp. 93–94; JEANNEL, 1962, pp. 198–199; BARR, 1971, pp. 142–144). Therefore, it has been expected that certain species at the same stage of differentiation as *Oroblemus* may still exist either in the Eurasian Continent or in North America.

Recently, we received two specimens of a small trechine beetle taken in a cave at the western end of the Tian Shan Mountains in Central Asia. It turned out to be a member of the *Trechoblemus* complex long waited for, and though seemingly different, had many important features in common with *Oroblemus*. This discovery is very important in several respects. In the first place, the Tian Shan Mountains lie about a half way from the Far East to eastern Europe, and neatly fall in the centre of the blank in our present knowledge about the distribution of the *Trechoblemus* complex. The occurrence of an apterous species in those mountains is an irrefutable proof that that part of Asia was once spread by certain winged ancestors of the genus-complex. Secondly, it still has faceted eyes, which are, though completely flat, sparsely covered with short pubescence. They are obviously larger than those of *Oroblemus*, which shows that the species is descended from an oculate ancestor in rather a recent period and is less modified than the Japanese trechines. Thirdly, it is the first trechine beetle ever found in a cave of Central Asia.

In the present paper, we are going to introduce this interesting new species into science under the name of *Oroblemmites tianshanicus*. The abbreviations to be used are as follows: HW—greatest width of head; PW—greatest width of pronotum; PL—length of pronotum, measured along the mid-line; PA—width of pronotal apex; PB—width of pronotal base; EW—greatest width of elytra; EL—greatest length of elytra.

Genus *Oroblemmites* S. UÉNO et PAWŁOWSKI, nov.

Type-species: *Oroblemmites tianshanicus* S. UÉNO et PAWŁOWSKI, sp. nov.

Closely allied to *Oroblemus* S. UÉNO et A. YOSHIDA (1966, p. 77) from northern Honshu, Japan, but distinguished from it by the following points: body, especially hind part, more strongly flattened, with slenderer antennae and legs; pubescence on dorsum reduced, being restricted to marginal areas of elytra; microsculpture degenerated, especially on head, while it is coarsely impressed on head in *Oroblemus*; eyes distinctly faceted though probably not functional; mandibular teeth obtuse and widely spaced; submentum sexsetose, lacking in the median pair of setae; humeral borders of elytra minutely serrulate; aedeagal apical lobe long and strongly curved ventrad; aedeagal inner sac provided with a single large copulatory piece, whose left ventral part is spinose.

Body elongate, flattened, depressed above especially on elytra, depigmented, and with fairly long antennae and slender legs; dorsal surface glabrous on head, pronotum and large part of elytra, densely pubescent in basal and humeral areas

of elytra and more sparsely so along their sides; ventral surface finely pubescent except for the lateral parts; inner wings absent. Microsculpture more or less degenerated throughout, only visible as a trace of polygonal meshes on neck, as transverse meshes and lines on lateral and basal parts of pronotum, and as fine transverse lines on some isolated portions of elytra.

Head fairly large and not much depressed above, with deep entire frontal furrows which are not angulate at middle and rather gradually divergent in front and behind; supraorbital setae normal, lying on lines convergent posteriorly; eyes completely flat though faceted and minutely pubescent; genae slightly convex, almost as long as eyes, convergent posteriad, and covered with short pubescence; neck constriction marked at the sides though shallow. Labrum transverse, widely emarginate at apex. Mandibles very stout, hooked at apices; right mandible tridentate, with the teeth widely spaced, only the apicalmost tooth being large, others small and obtuse; left mandible obtusely bidentate. Labium not fused, with a distinct labial suture between mentum and submentum, the former bearing a large broad tooth in apical emargination, which is almost parallel-sided and deeply cleft at apex; submentum provided with a transverse row of only six setae including the pair at the lateral corners; ligula moderately rounded at apex and not much produced, with two long setae at middle and three shorter ones on each side; paraglossae rather short and slightly arcuate, though extending much beyond ligula. Maxillae short and thick, with strongly arcuate lacinia whose apex is fine and very sharp. Palpi short, stout, and sparsely pubescent; penultimate segment of maxillary palpus elongated subpyriform, asetose, only five-sevenths as long as apical segment, only twice as long as wide, widest at about apical two-fifths, and then gently narrowed towards apex; that of labial palpus a little shorter than apical segment, slightly arcuate, rather widely dilated towards apex, and quadrisetose; apical segments elongated subconical. Antennae subfiliform, rather long though stout, and hardly dilated towards apices; terminal segment the longest, followed in length by scape, segment 2 about as long as segment 10 and the shortest, others subequal in length to one another.

Pronotum small, transverse, not much contracted basad, with a pair of shallow foveoles on the disc; sides entirely bordered, not sinuate behind, and microscopically ciliated especially near front angles, with two marginal setae, of which the anterior one is just before the widest part and the posterior is almost on hind angle; front angles rounded, hind angles small and obtuse; base oblique on each side; median line clearly impressed, widening in basal area and reaching basal margin; apical transverse impression present though shallow; basal transverse impression rather mal-defined though continuous; basal foveae very small but deep, shallowly extending antero-laterad; postangular carinae absent. Scutellum small though distinct.

Elytra oblong-ovate, depressed above, and without transverse impression on basal peduncle; basal and humeral areas densely covered with short erect pubescence,

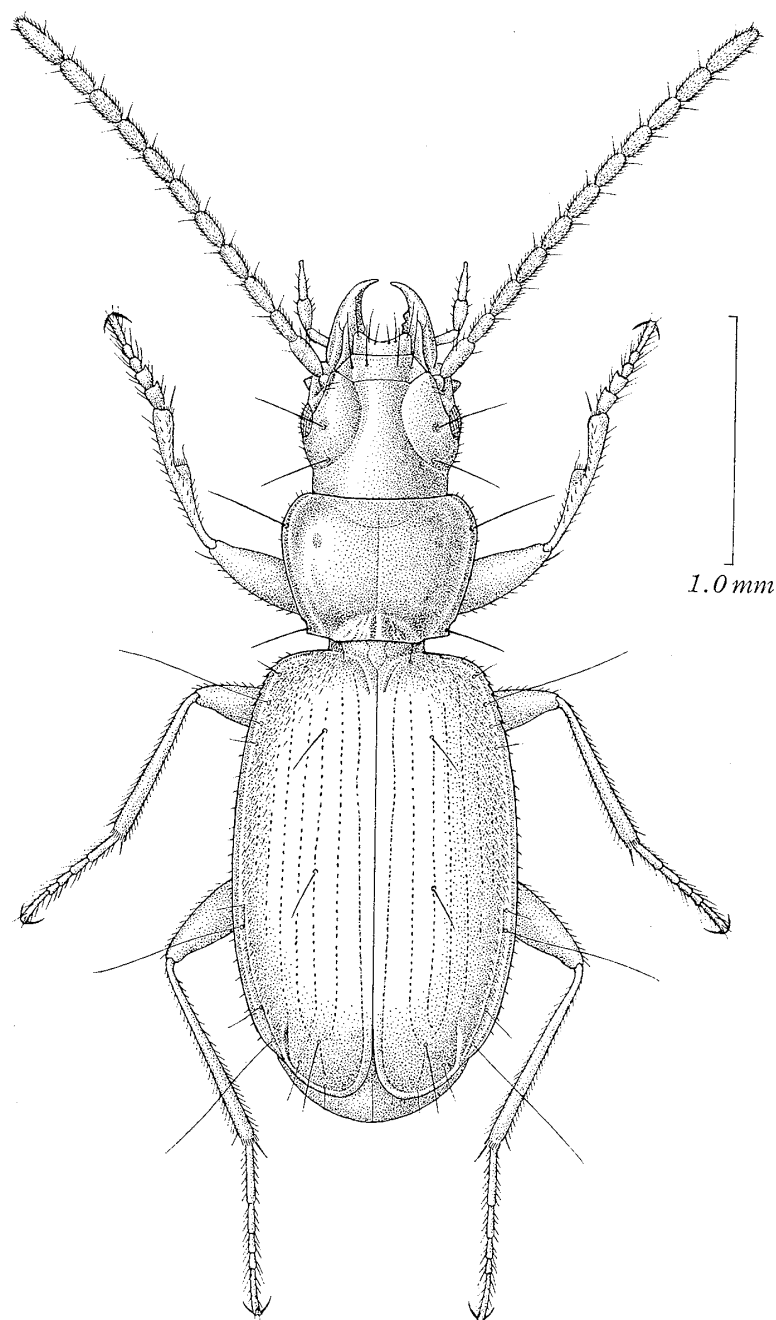


Fig. 1. *Orolemites tianshanicus* S. UÉNO et PAWŁOWSKI, gen. et sp. nov., ♂, from a cave at Taldi-Bulak in Kazakhstan.

intervals 7–8 also covered, though rather sparsely, with similar pubescence; apices separately rounded, forming a large re-entrant angle at suture; sides narrowly bordered and minutely ciliated throughout, only feebly arcuate at middle, with serrulate humeral part; shoulders distinct, almost square, with prehumeral borders almost

perpendicular to the mid-line; striae moderately impressed on the disc, distinctly crenulate or rather punctate, becoming much shallower at the side and nearly obliterated though even stria 7 is traceable as a row of fine punctures, stria 8 deeply impressed behind the middle set of marginal umbilicate pores; scutellar striole distinct, fairly long; apical striole short but deep, rather strongly curved and joining stria 5; apical carina short but salient; stria 3 with two setiferous dorsal pores before middle; preapical pore present, lying at the apical anastomosis of striae 2 and 3, and almost equally distant from apex and from suture; marginal umbilicate pores aggregated and almost regular, though the first pore of the humeral set is somewhat isolated from the other three.

Ventral surface finely pubescent on the median part of each segment; sternites 3–5 each with a pair of setae only; anal sternite with a pair of marginal setae in ♂. Legs fairly slender; protibiae slightly bowed, moderately dilated towards apices, entirely pubescent, and not externally grooved; tarsi thin, protarsal segments 1 and 2 in ♂ moderately dilated, inwardly denticulate at apices, and furnished beneath with sexual adhesive appendages.

Male genital organ very small; aedeagus short and compressed, with long apical lobe produced ventro-apically; basal part only slightly curved, with small basal orifice and large sagittal aileron; inner sac armed with a large anisotropic copulatory piece, whose left ventral part is peculiarly spinose; styles subequal in length, each bearing at least four short setae at apex.

Range. Known so far only from the westernmost part of the Tian Shan Mountains in Soviet Central Asia.

Notes. If it occurred in an adjacent area of Japan, *Oroblemmites* could be regarded as a subgenus of *Oroblemus*, since it shares with the latter such basic characters as the pubescent eyes, the free mentum with very broad bifid tooth, the chaetotaxy of elytra, and the structure of fore legs. Even the important difference in the number of submental setae, six in the former and eight in the latter, cannot be considered definite by itself, as was demonstrated in the classification of Japanese trechines belonging to the genus *Ishidatrechus*. The type-species of this genus possesses eight submental setae as is usual for a member of the *Trechoblemus* complex, but in the subgenus *Suzuka*, there are only six (exceptionally seven) setae on the submentum in spite of the fact that it is doubtless allied to *Ishidatrechus* s. str. (cf. UENO, 1956, pp. 70, 72).

Actually, however, the known locality of *Oroblemmites* is separated from the distributional range of *Oroblemus* by a distance of about 6,000 km, and there is little possibility that certain intermediary forms should occur in the intervening areas. Besides, a considerable difference in the evolutionary trend of certain minor characters is observed between the two. For instance, the microsculpture of integument becomes vanished from the large part of head in *Oroblemmites*, a condition that is very exceptional in the trechine beetles belonging to the *Trechoblemus* complex, in which a clearly impressed micro-reticulation usually remains on the head, even

when such a microsculpture disappears on the other parts of body. *Oroblemus* is ordinary in this respect, possessing coarse meshes covering the cephalic integument. Another peculiarity of *Oroblemites* is the mode of reduction of the short dorsal pubescence, which remains only in the marginal areas of elytra. In *Oroblemus*, the whole dorsal surface is densely covered with short pubescence in *O. caecus* (cf. UÉNO & YOSHIDA, 1966, p. 78, fig. 1), while in *O. sparsepilifer*, the pubescence becomes rudimentary on the head and pronotum, and becomes ranged in longitudinal rows on the elytra (cf. UÉNO, 1975, p. 116, fig. 1). Usually, these differences in the evolutionary trend of microsculpture and pubescence are not regarded as generic, but they can be considered indicative of phyletic discrepancy between *Oroblemites* and *Oroblemus*.

It is most probable that the two groups, *Oroblemites* and *Oroblemus*, have a common ancestry, but they must have evolved independent of each other. Their close similarity must have been caused by convergence in connection with their existence in subterranean environment. Here, we have to face the dilemma familiar to all evolutionary taxonomists: should we combine them in a single genus? We think not. We prefer to regard them as generically distinctive however similar they may look, so far as they are considered phyletically different.

***Oroblemites tianshanicus* S. UÉNO et PAWŁOWSKI, sp. nov.**

(Figs. 1–3)

Length: 3.00–3.30 mm (from apical margin of clypeus to apices of elytra).

A microphthalmic trechine with elongate flattened body. Colour brown, shiny; head, lateral parts of pronotum, and elytra more or less yellowish; palpi, apical two-thirds of antennae, and legs pale yellowish brown.

Head fairly large, only a little wider than long, with frontal furrows deep in front and moderately impressed even behind genae; frons and vertex moderately convex, supraorbital areas rather flat at the posterior parts; anterior supraorbital pore foveolate, lying at the mid-eye level, the posterior one adjoining frontal furrow; microsculpture mostly vanished, though isodiametric meshes are detectable on neck; eyes rudimentary though distinctly faceted; genae about seven-eighths as long as eyes, slightly convex, and gradually contracted towards shallow neck constriction; neck wide; antennae reaching basal three-sevenths of elytra, with ellipsoidal middle segments, each of which is fully twice as long as wide; scape rather narrow, only slightly thicker than terminal segment.

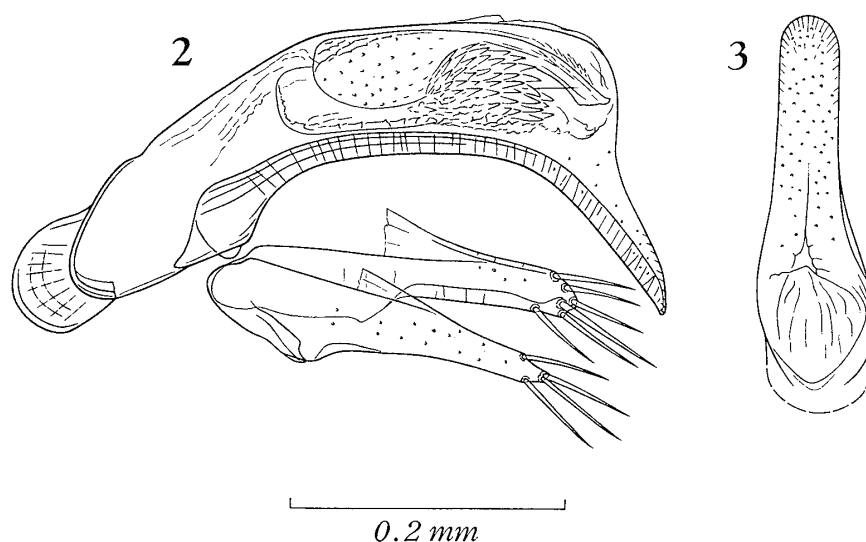
Pronotum transverse, somewhat obtapezoidal, widest at about three-fourths from base, and much more gradually contracted towards base than towards apex; PW/HW 1.19–1.25, PW/PL 1.33–1.35, PW/PA 1.28–1.38, PW/PB 1.31–1.38; surface moderately convex at the antero-lateral parts but rather weakly so on the disc, with a round foveole on each side at the level of the widest part; microsculpture sharply impressed at the postero-lateral and basal parts, but otherwise degenerated

and almost completely vanished on the disc; sides sharply reflexed with posteriorly widened margins, strongly arcuate in front, very feebly so in posterior three-fifths, and very briefly but distinctly emarginate just before hind angles, which are obtusely denticulate; apex slightly but widely emarginate, as wide as base, PA/PB 1.00–1.03, with front angles rounded and not porrect; base straight at the median part, obliquely truncated on each side; basal area uneven, longitudinally wrinkled, the rugosity extending laterad into basal foveae, which are, though deep, not clearly delimited.

Elytra oblong-ovate and depressed, widest at about middle, and more gradually narrowed towards bases than towards apices; EW/PW 1.45–1.48, EL/EW 1.53–1.55; disc widely flat; microsculpture composed of fine transverse lines though mostly effaced; sides very feebly arcuate from behind salient shoulders to the level of the sixth pore of the marginal umbilicate series, and then moderately rounded to apices through very slight preapical emarginations; striae 1–2 rather deeply impressed on the disc, 2–4 becoming more or less shallower near base, 6–7 nearly obsolete though indicated by rows of punctures; intervals only slightly convex even near suture; stria 3 with two dorsal pores at a little behind basal one-sixth and about middle.

Legs fairly slender; tarsal segment 1 shorter than the three following segments taken together in both meso- and metatarsi; segment 4 evidently longer than wide in metatarsus.

Male genital organ small though moderately sclerotized. Aedeagus about one-fourth as long as elytra, short, hardly arcuate at middle, and slightly dilated towards apical orifice, with rather elongate basal part slightly curved ventrad;



Figs. 2–3. Male genitalia of *Orolemites tianshanicus* S. UÉNO et PAWŁOWSKI, gen. et sp. nov., from a cave at Taldi-Bulak in Kazakhstan; left lateral view (2), and apical part of aedeagus, dorso-apical view (3).

basal orifice small, with the sides not emarginate; sagittal aileron large, though thin and hyaline; viewed laterally, apical lobe narrow, protruding ventro-apically, gradually tapering, and ending in a sharp point; viewed dorsally, apical lobe rather wide, parallel-sided, and rounded at the extremity; ventral margin almost straight at middle in profile. Copulatory piece very large, more than a half as long as aedeagus, somewhat spatulate, the right dorsal part forming a narrow arcuate lobe; left ventral part provided with a cluster of numerous sharp teeth directed apically. Styles fairly long and straight, subequal in length though the right style is broader than the left; in the holotype, left style provided with four apical setae, while right style bears six apical setae.

Female unknown.

Type-series. Holotype: ♂, paratype: 1 ♂, 7-V-1973, S. GRÜNTAL leg.

The holotype is deposited in the collection of the National Science Museum (Nat. Hist.), Tokyo. The paratype is in that of the Institute of Systematic and Experimental Zoology, Kraków.

Type-locality. A cave at Taldi-Bulak (ca. 42° N, 71° E), in Aksu-Džabagly Reserve of Kazakhstan, Soviet Central Asia.

Notes. It seems worth noting that the general appearance of the present species somewhat recalls that of *Neoblemus* or *Cnides*. Of course, these genera belong to different tribes of Trechinae, the former to Perileptini and the latter to Trechodini, but both are ripicolous like *Trechoblemus*. The elongate, flattened, and often subparallel-sided, body form is characteristic of such riparian species. Though we are not informed of its exact habitat, excepting that it was taken in a cave, this new species may probably be hygrophilous or at least its immediate ancestor may have lived at the water edges of streams or rivers, like the existing species of *Trechoblemus*.

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